

What is claimed is:

[Claim 1] 1. A guiding device for navigating a travel of a movable body, comprising:

a map information acquirer for acquiring map information;
a current-position information acquirer for acquiring current-position information about a current-position of the movable body;
a destination information acquirer for acquiring destination information about a position of a destination to which the movable body travels;
a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body;
a travel smoothness recognizer for recognizing travel smoothness for the movable body to travel based on the traffic information;
a travel route search section that searches for a plurality of travel routes based on the current-position information, the destination information and the map information, assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the recognized travel smoothness of the travel routes, and sets the travel route based on the assigned percentage; and
a notification section for notifying the set travel route.

[Claim 2] 2. The guiding device according to claim 1,
wherein the travel smoothness recognizer recognizes travel smoothness on the notified travel route, and
wherein the travel route search section assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and the travel smoothness of the other travel routes, and searches for the travel route to be notified again by the notification section based on the assigned percentage.

[Claim 3] 3. A guiding device for navigating a travel of a movable body, comprising:

a map information acquirer for acquiring map information;
a current-position information acquirer for acquiring current-position information about a current-position of the movable body;
a destination information acquirer for acquiring destination information about a position of a destination to which the movable body travels;
a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body;
a travel route search section for searching for a travel route for the movable body based on the current-position information, the destination information and the map information;
a notification section for notifying the searched travel route; and
a travel smoothness recognizer for recognizing travel smoothness for the movable body on the searched travel route based on the traffic information;
wherein the travel route search section assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and the travel smoothness of the other travel routes, and searches for the travel route to be notified again by the notification section based on the assigned percentage.

[Claim 4] 4. The guiding device according to claim 2, wherein the travel route search section searches for the travel route when the travel smoothness on the notified travel route is changed.

[Claim 5] 5. The guiding device according to claim 3, wherein the travel route search section searches for the travel route when the travel smoothness on the notified travel route is changed.

[Claim 6] 6. The guiding device according to claim 1, wherein the travel route search section gives priority for being notified by the notification section to the travel route assigned with higher percentage.

[Claim 7] 7. The guiding device according to claim 3, wherein the travel route search section gives priority for being notified by the notification section to the travel route assigned with higher percentage.

[Claim 8] 8. The guiding device according to claim 1, wherein the travel smoothness recognizer recognizes a required time for the movable body to travel on the respective travel routes as the travel smoothness, and wherein the travel route search section assigns higher percentage to the travel route with shorter required time.

[Claim 9] 9. The guiding device according to claim 3, wherein the travel smoothness recognizer recognizes a required time for the movable body to travel on the respective travel routes as the travel smoothness, and wherein the travel route search section assigns higher percentage to the travel route with shorter required time.

[Claim 10] 10. The guiding device according to claim 1, wherein the travel route search section assigns higher percentage to a travel route of which required time has smaller share in the total required time of the respective travel routes.

[Claim 11] 11. The guiding device according to claim 3, wherein the travel route search section assigns higher percentage to a travel route of which

required time has smaller share in the total required time of the respective travel routes.

[Claim 12] 12. The guiding device according to claim 1, wherein the travel route search section makes the notification section not to notify a travel route assigned with percentage smaller than a predetermined value.

[Claim 13] 13. The guiding device according to claim 3, wherein the travel route search section makes the notification section not to notify a travel route assigned with percentage smaller than a predetermined value.

[Claim 14] 14. The guiding device according to claim 1, wherein the traffic information acquirer acquires at least either a current traffic condition or a traffic condition obtained by statistically processing past traffic conditions based on time factors as the traffic information.

[Claim 15] 15. The guiding device according to claim 3, wherein the traffic information acquirer acquires at least either a current traffic condition or a traffic condition obtained by statistically processing past traffic conditions based on time factors as the traffic information.

[Claim 16] 16. A guiding system comprising:

a server having a storage for storing map information; and
a guiding device for acquiring the map information from the server over a network and for navigating a travel of a movable body, including:
a map information acquirer for acquiring the map information;
a current-position information acquirer for acquiring current-position information about a current-position of the movable body;
a destination information acquirer for acquiring destination information about a position of a destination to which the movable body travels;

a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body;
a travel smoothness recognizer for recognizing travel smoothness for the movable body to travel based on the traffic information;
a travel route search section that searches for a plurality of travel routes based on the current-position information, the destination information and the map information, assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the recognized travel smoothness of the travel routes, and sets the travel route based on the assigned percentage; and
a notification section for notifying the set travel route.

[Claim 17] 17. A guiding system comprising:

a server having a storage for storing map information; and
a guiding device for acquiring the map information from the server over a network and for navigating a travel of a movable body, including:
a map information acquirer for acquiring the map information;
a current-position information acquirer for acquiring current-position information about a current-position of the movable body;
a destination information acquirer for acquiring destination information about a position of a destination to which the movable body travels;
a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body;
a travel route search section for searching for a travel route for the movable body based on the current-position information, the destination information and the map information;
a notification section for notifying the searched travel route; and
a travel smoothness recognizer for recognizing travel smoothness for the movable body on the searched travel route based on the traffic information;
wherein the travel route search section assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and the travel

smoothness of the other travel routes, and searches for the travel route to be notified again by the notification section based on the assigned percentage.

[Claim 18] 18. A guiding system comprising:

- a terminal unit that requests a travel route; and
- a guiding device that is connected to the terminal unit for communicating therewith over a network and adapted to notify a travel route to the terminal unit and navigates a travel of a movable body, including:
 - a map information acquirer for acquiring map information;
 - a current-position information acquirer for acquiring current-position information about a current-position of the movable body;
 - a destination information acquirer for acquiring destination information about a position of a destination to which the movable body travels;
 - a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body;
 - a travel smoothness recognizer for recognizing travel smoothness for the movable body to travel based on the traffic information;
 - a travel route search section that searches for a plurality of travel routes based on the current-position information, the destination information and the map information, assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the recognized travel smoothness of the travel routes, and sets the travel route based on the assigned percentage; and
 - a notification section for notifying the set travel route.

[Claim 19] 19. A guiding system comprising:

- a terminal unit that requests a travel route; and
- the guiding device that is connected to the terminal unit for communicating therewith over a network and adapted to notify a travel route to the terminal unit and navigates a travel of a movable body, including:
 - a map information acquirer for acquiring map information;

a current-position information acquirer for acquiring current-position information about a current-position of the movable body;
a destination information acquirer for acquiring destination information about a position of a destination to which the movable body travels;
a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body;
a travel route search section for searching for a travel route for the movable body based on the current-position information, the destination information and the map information;
a notification section for notifying the searched travel route; and
a travel smoothness recognizer for recognizing travel smoothness for the movable body on the searched travel route based on the traffic information;
wherein the travel route search section assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and the travel smoothness of the other travel routes, and searches for the travel route to be notified again by the notification section based on the assigned percentage.

[Claim 20] 20. A guiding system comprising:

a terminal unit having: a request signal generating section for generating a request signal requesting a travel route; and an output section for outputting the travel route; and
a server that is connected to the terminal unit for communicating therewith over a network and provided with: a storage for storing map information; a current-position information acquirer for acquiring current-position information about a current-position of a movable body; a destination information acquirer for acquiring destination information about a position of a destination to which the movable body travels; a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body; a request signal recognizer for recognizing the request signal; a travel smoothness recognizer that recognizes travel smoothness for the movable body to travel based on the traffic information; a travel route search section

that assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected according to the travel smoothness based on the current-position information, the destination information and the map information when the request signal recognizer recognizes the request signal, and sets the travel route based on the assigned percentage; and a notification section for notifying the set travel route to the terminal unit so that the travel route can be output by the output section of the terminal unit.

[Claim 21] 21. A guiding system comprising:

a terminal unit having: a request signal generating section for generating a request signal requesting a travel route; and an output section for outputting the travel route; and

a server that is connected to the terminal unit for communicating therewith over a network and provided with: a storage for storing map information; a current information acquirer for acquiring current-position information about a current-position of a movable body; a destination information acquirer for acquiring position information about a position of a destination to which the movable body travels; a traffic information acquirer for acquiring traffic information about a traffic condition for the movable body; a request signal recognizer for recognizing the request signal; a travel route search section that searches for a travel route for the movable body based on the current-position information, the destination information and the map information, when the request signal recognizer recognizes the request signal; a notification section for notifying the searched travel route to the terminal unit so that the travel route can be output by the output section of the terminal unit; and a travel smoothness recognizer for recognizing travel smoothness for the movable body on the searched travel route based on the traffic information;

wherein the travel route search section of the server assigns percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and the travel smoothness of the other travel routes, and searches for the travel route

to be notified again by the notification section based on the assigned percentage.

[Claim 22] 22. The guiding system according to claim 16, wherein the current-position acquirer acquires current-position information of the movable body equipped with the terminal unit to which the travel route is notified by the notification section, and wherein if the travel route search section determines that the movable body does not travel on the notified travel route based on the current-position information of the movable body and the notified travel route, the travel route search section changes the percentage to be assigned.

[Claim 23] 23. The guiding system according to claim 17, wherein the current-position acquirer acquires current-position information of the movable body equipped with the terminal unit to which the travel route is notified by the notification section, and wherein if the travel route search section determines that the movable body does not travel on the notified travel route based on the current-position information of the movable body and the notified travel route, the travel route search section changes the percentage to be assigned.

[Claim 24] 24. The guiding system according to claim 18, wherein the current-position acquirer acquires current-position information of the movable body equipped with the terminal unit to which the travel route is notified by the notification section, and wherein if the travel route search section determines that the movable body does not travel on the notified travel route based on the current-position information of the movable body and the notified travel route, the travel route search section changes the percentage to be assigned.

[Claim 25] 25. The guiding system according to claim 19,

wherein the current-position acquirer acquires current-position information of the movable body equipped with the terminal unit to which the travel route is notified by the notification section, and
wherein if the travel route search section determines that the movable body does not travel on the notified travel route based on the current-position information of the movable body and the notified travel route, the travel route search section changes the percentage to be assigned.

[Claim 26] 26. The guiding system according to claim 20,
wherein the current-position acquirer acquires current-position information of the movable body equipped with the terminal unit to which the travel route is notified by the notification section, and
wherein if the travel route search section determines that the movable body does not travel on the notified travel route based on the current-position information of the movable body and the notified travel route, the travel route search section changes the percentage to be assigned.

[Claim 27] 27. The guiding system according to claim 21,
wherein the current-position acquirer acquires current-position information of the movable body equipped with the terminal unit to which the travel route is notified by the notification section, and
wherein if the travel route search section determines that the movable body does not travel on the notified travel route based on the current-position information of the movable body and the notified travel route, the travel route search section changes the percentage to be assigned.

[Claim 28] 28. The guiding system according to claim 22,
wherein if the travel route search section determines that the movable body does not travel on the notified travel route, the travel route search section reduces the percentage assigned to other travel route on which the movable body travels.

[Claim 29] 29. The guiding system according to claim 23, wherein if the travel route search section determines that the movable body does not travel on the notified travel route, the travel route search section reduces the percentage assigned to other travel route on which the movable body travels.

[Claim 30] 30. The guiding system according to claim 24, wherein if the travel route search section determines that the movable body does not travel on the notified travel route, the travel route search section reduces the percentage assigned to other travel route on which the movable body travels.

[Claim 31] 31. The guiding system according to claim 25, wherein if the travel route search section determines that the movable body does not travel on the notified travel route, the travel route search section reduces the percentage assigned to other travel route on which the movable body travels.

[Claim 32] 32. The guiding system according to claim 26, wherein if the travel route search section determines that the movable body does not travel on the notified travel route, the travel route search section reduces the percentage assigned to other travel route on which the movable body travels.

[Claim 33] 33. The guiding system according to claim 27, wherein if the travel route search section determines that the movable body does not travel on the notified travel route, the travel route search section reduces the percentage assigned to other travel route on which the movable body travels.

[Claim 34] 34. A guiding method comprising:

acquiring map information, current-position information about a current-position of a movable body, destination information about a position of a destination to which the movable body travels, and traffic information about a traffic condition for the movable body;
searching for a plurality of travel routes for the movable body based on the current-position information, the destination information and the map information;
recognizing travel smoothness for the movable body to travel on the searched travel routes based on the traffic information;
assigning percentage so that the travel route with higher travel smoothness has higher chance to be selected based on the recognized travel smoothness of the respective travel routes; and
notifying the travel routes based on the assigned percentage.

[Claim 35] 35. A guiding method comprising:

acquiring map information, current-position information about a current-position of a movable body, destination information about a position of a destination to which the movable body travels, and traffic information about a traffic condition for the movable body,
searching for and notifies a travel route for the movable body based on the current-position information, the destination information and the map information;
recognizing travel smoothness for the movable body to travel on the notified travel route;
assigning percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and travel smoothness of the other travel routes; and
notifying the travel route again based on the assigned percentage.

[Claim 36] 36. A guiding program for executing a guiding method by a computer, the guiding method comprising:

acquiring map information, current-position information about a current-position of a movable body, destination information about a position of a destination to which the movable body travels, and traffic information about a traffic condition for the movable body;

searching for a plurality of travel routes for the movable body based on the current-position information, the destination information and the map information;

recognizing travel smoothness for the movable body to travel on the searched travel routes based on the traffic information;

assigning percentage so that the travel route with higher travel smoothness has higher chance to be selected based on the recognized travel smoothness of the respective travel routes; and

notifying the travel routes based on the assigned percentage.

[Claim 37] 37. A guiding program for executing a guiding method by a computer, the guiding method comprising:

acquiring map information, current-position information about a current-position of a movable body, destination information about a position of a destination to which the movable body travels, and traffic information about a traffic condition for the movable body,

searching for and notifies a travel route for the movable body based on the current-position information, the destination information and the map information;

recognizing travel smoothness for the movable body to travel on the notified travel route;

assigning percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and travel smoothness of the other travel routes; and
notifying the travel route again based on the assigned percentage.

[Claim 38] 38. A recording medium storing a guiding program in a manner readable by a computer, the guiding program for executing a guiding method comprising:

acquiring map information, current-position information about a current-position of a movable body, destination information about a position of a destination to which the movable body travels, and traffic information about a traffic condition for the movable body;
searching for a plurality of travel routes for the movable body based on the current-position information, the destination information and the map information;
recognizing travel smoothness for the movable body to travel on the searched travel routes based on the traffic information;
assigning percentage so that the travel route with higher travel smoothness has higher chance to be selected based on the recognized travel smoothness of the respective travel routes; and
notifying the travel routes based on the assigned percentage..

[Claim 39] 39. A recording medium storing a guiding program in a manner readable by a computer, the guiding program for executing a guiding method comprising:

acquiring map information, current-position information about a current-position of a movable body, destination information about a position of a destination to which the movable body travels, and traffic information about a traffic condition for the movable body,
searching for and notifies a travel route for the movable body based on the current-position information, the destination information and the map information;
recognizing travel smoothness for the movable body to travel on the notified travel route;
assigning percentage so that the travel route with higher travel smoothness has a higher chance to be selected based on the travel smoothness of the notified travel route and travel smoothness of the other travel routes; and

notifying the travel route again based on the assigned percentage.